

AMENDMENTS TO THE CLAIMS

Please amend claims 17-35 as follows:

Claims 1-16 (Cancelled).

Claim 17 (Currently Amended) A continuous process for fractionating a C<sub>4</sub> fraction by extractive distillation using a selective solvent in an extractive distillation column, wherein a dividing wall is installed in the longitudinal direction in the extractive distillation column to form a first region, a second region and a lower combined column region, wherein the process comprises:

taking off from the first region and a top stream comprising one or more butanes; ~~is taken off from the first region;~~

taking off from the second region a top stream comprising one or more butenes; and ~~is taken off from the second region and~~

taking off from the lower combined column region a stream comprising one or more hydrocarbons from the C<sub>4</sub> fraction which are more soluble in the selective solvent than are the butanes and the butenes ~~is taken off from the lower combined column region.~~

Claim 18 (Currently Amended) A The process as claimed in according to claim 17, wherein the stream comprising the hydrocarbons from the C<sub>4</sub> fraction which are more soluble in the selective solvent than are the butanes and the butenes is taken off as a side stream from the lower combined column region and the selective solvent is taken off as a bottom stream from the extractive distillation column.

Claim 19 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, wherein the stream comprising the hydrocarbons from the C<sub>4</sub> fraction which are more soluble in the selective solvent than are the butanes and the butenes is taken off together with the selective solvent as a bottom stream from the extractive distillation column.

Claim 20 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, wherein the C<sub>4</sub> fraction is fed into the first region of the extractive distillation column, the top stream comprising the butanes is taken off from the first region of the extractive distillation column and the top stream comprising the butenes is taken off from the second region of the extractive distillation column.

Claim 21 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, wherein two or more, thermally coupled columns are used in place of the extractive distillation column with dividing wall.

Claim 22 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, wherein the selective solvent ~~used~~ comprises one or more ~~of the~~ substances selected from the group consisting of dimethylformamide, acetonitrile, furfural, and N-methylpyrrolidone.

Claim 23 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, wherein ~~from 10-80,~~ 10-80 theoretical plates are located in the region of the dividing wall of the extractive distillation column.

Claim 24 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, wherein a heterogeneously catalyzed selective hydrogenation of the hydrocarbons comprising

triple bonds from the C<sub>4</sub> fraction to hydrocarbons comprising double bonds is additionally carried out in the extractive distillation column.

Claim 25 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, wherein the stream comprising the hydrocarbons which are more soluble in the selective solvent than are the butanes and butenes which is taken off from the extractive distillation column is fed to a first distillation column in which it is separated into a top stream comprising 1,3-butadiene, propyne, possibly further low boilers and possibly water, and a bottom stream comprising 1,3-butadiene, 1,2-butadiene, acetylenes and possibly further high boilers, with the proportion of 1,3-butadiene in the bottom stream from the distillation column being regulated so that it is sufficiently high to dilute the acetylenes to outside the range in which there is a risk of spontaneous decomposition and the top stream from the first distillation column is fed to a second distillation column and in this is separated into a top stream comprising propyne, possibly further low boilers and possibly water and a bottom stream comprising pure 1,3-butadiene.

Claim 26 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, wherein the bottom stream from the first distillation column and the top stream from the second distillation column are passed to a reactive distillation column in which a heterogeneously catalyzed selective hydrogenation of the hydrocarbons comprising triple bonds to hydrocarbons comprising double bonds is carried out by means of hydrogen, with a partial conversion of the acetylenes, to give a top stream comprising 1,3-butadiene, butanes, butenes and non-hydrogenated hydrocarbons having triple bonds and a bottom stream comprising high boilers which is discharged.

Claim 27 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, further comprising ~~a step wherein~~ processing the stream comprising the butenes, isobutene, 1-butenes and 2-butenes ~~is further processed~~ in a reactive distillation column to give a stream comprising predominantly isobutene and a stream comprising predominantly 2-butenes, with 1-butene being hydroisomerized to 2-butenes in the reactive distillation column and the stream comprising predominantly isobutene being taken off as a top stream from the reactive distillation column and the stream comprising predominantly 2-butenes being taken off as a bottom stream from the reactive distillation column.

Claim 28 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, further comprising ~~a step wherein~~ subjecting the stream comprising the butenes ~~is subjected~~ to a selective etherification of the isobutene and fractionation to give a stream comprising the isobutene ether and a stream comprising 1-butene and 2-butenes and subsequently further processing the stream comprising 1-butene and the 2-butenes by gas-phase isomerization of the 2-butenes to give a stream comprising predominantly 1-butene or by hydroisomerization of the 1-butene to give a stream comprising predominantly 2-butenes.

Claim 29 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, further comprising ~~a step wherein~~ processing the stream comprising the butenes, isobutene, 1-butene and 2-butenes, ~~is further processed~~ by skeletal isomerization of 1-butene and 2-butenes to isobutene, giving to give a stream comprising predominantly isobutene.

Claim 30 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, further comprising ~~a step wherein~~ processing the stream comprising the butenes, isobutene, 1-

butene and 2-butenes, is ~~further processed~~ by separating off isobutene and working it up by skeletal isomerization to give a stream comprising predominantly 1-butene and 2-butenes.

Claim 31 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, further comprising a ~~step wherein~~ processing the stream comprising the butenes, isobutene, 1-butene and 2-butenes, is ~~further processed~~ by separating off isobutene and processing it further by hydrogenation to give a stream which comprises predominantly isobutane and is preferably fed to a cracker or by skeletal isomerization to give a stream comprising predominantly n-butane and dehydrogenation of the latter to give a stream comprising predominantly 1-butene and 2-butenes.

Claim 32 (Currently Amended) A ~~The process as claimed in~~ according to claim 17, further comprising a ~~step wherein~~ processing the stream comprising the butenes, isobutene, 1-butene and 2-butenes, is ~~further processed~~ by selective dimerization of isobutene to the corresponding C<sub>8</sub>-hydrocarbons and subsequent fractional distillation to give a stream comprising 1-butene and 2-butenes and a stream comprising the C<sub>8</sub>-hydrocarbons.

Claim 33 (Currently Amended) A ~~The process as claimed in~~ according to claim 21, wherein two or three, thermally coupled columns are used in place of the extractive distillation column with dividing wall.

Claim 34 (Currently Amended) A ~~The process as claimed in~~ according to claim 22, wherein the selective solvent is N-methylpyrrolidone in an ~~one~~ aqueous solution.

Claim 35 (Currently Amended) A The process as claimed in according to claim 23,  
wherein 25 theoretical plates are located in the region of the dividing wall of the extractive  
distillation column.